

Abstract Submitted  
for the 4CF09 Meeting of  
The American Physical Society

**Microscopy of extreme ultraviolet lithography masks with 13.2 nm tabletop laser illumination** S. CARBAJO, F. BRIZUELA, Y. WANG, C.A. BREWER, F. PEDACI, W. CHAO, E.H. ANDERSON, Y. LIU, K.A. GOLDBERG, P. NAULLEAU, P. WACHULAK, M.C. MARCONI, D.T. ATTWOOD, J.J. ROCCA, C.S. MENONI, COLORADO STATE UNIVERSITY TEAM, LAWRENCE BERKELEY NATIONAL LABORATORY TEAM — We report the demonstration of a reflection microscope that operates at 13.2 nm wavelength with a spatial resolution of  $55 \pm 3$  nm. The microscope uses illumination from a tabletop extreme ultraviolet laser to acquire aerial images of photolithography masks with a 20 s exposure time. The sample used for the initial demonstration of this EUV microscope consisted of Ni grating and elbow patterns printed onto a Mo/Si multilayer coated  $2.5 \times 2.5$  cm square Si wafer. Patterns with half-pitch sizes ranging from 80 nm to 500 nm were successfully printed onto the Mo/Si coated sample. The modulation transfer function of the optical system was characterized and these results constitute a first step toward the realization of table-top actinic microscopes for EUVL mask inspection.

Sergio Carbajo

Date submitted: 23 Sep 2009

Electronic form version 1.4